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ABSTRACT

Too many of today's high school graduates do not have the academic knowledge and skills they need to get good jobs, to enter first-rate vocational training programs, or to earn college degrees. The "school-to-work" (or more broadly, "school-to-career") movement has the potential to bring together the high standards, proven instructional strategies, exposure to work, and incentives for study that will provide an upgraded education for students, especially the average students who have been underserved by high schools. The following seven features are recommended in order to help the school-to-work initiative succeed: (1) provide all students with a strong academic foundation prior to high school; (2) expose all secondary students to rigorous academic coursework in all core subjects; (3) use effective and engaging teaching methods; (4) provide career exposure to improve academic performance and to prepare students for life after high school; (5) create an incentive for students to study and achieve--make a high school diploma count; (6) provide professional development for educators; and (7) use student achievement data to evaluate progress regularly. These recommendations will lead to the improvements in high schools necessary for graduates to leave school prepared for the real world. (KC)

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Reaching the Next Step

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

HOW *SCHOOL TO CAREER* CAN HELP STUDENTS REACH HIGH ACADEMIC STANDARDS AND PREPARE FOR GOOD JOBS

Introduction

In 1983, when the National Commission on Excellence in Education released "A Nation at Risk," American educators and the general public received the first in a series of wake-up calls that have echoed now for more than a decade. The message then was that students were not mastering a challenging academic curriculum while in elementary and secondary school, and they were graduating without the knowledge and skills they would need to live fulfilling, productive lives.

Fourteen years after "A Nation at Risk," much has changed in our schools. Many "reforms" have been tried, and small improvements have been made. But the nature of the problem is the same. Too many of today's high school graduates do not have the academic knowledge and skills they need to get good jobs, to enter first-rate vocational training programs or to earn four-year college degrees. Their grades and their diplomas may lead youngsters to think they are prepared, but for most, that balloon bursts when they get out into the world and learn that they don't have the skills that most high-paying jobs require; they don't have the credentials to enter the better training programs that could lead to good jobs; and they didn't learn enough in their academic courses to prepare them for college-level work.

How Severe Is the Performance Problem?

Is it an exaggeration to say that most high school graduates are not well prepared for the world they face when they leave school? We don't think so. The most recent National Assessment of Educational Progress results (1994) show that an alarmingly low number of American high school students perform well in the core academic subjects:

- *Reading:* Only 36 percent of 12th graders read at a "proficient" level; 25 percent of 12th graders can't read at a "basic" level.
- *Writing:* Only 30 percent of 11th graders write at a "proficient" level; 15 percent can't write at a "basic" level.
- *Math:* Only 60 percent of 17-year-olds have mastered basic high school-level math skills such as computing with decimals, fractions and percents; recognizing geometric figures; and solving simple equations. Only 7 percent of 17-year-olds can solve multi-step problems and use beginning algebra.
- *Science:* While a majority of 17-year-olds know some basic scientific facts and principles, less than half demonstrate mastery of in-depth scientific knowledge and straightforward scientific reasoning.
- *History:* Fewer than half of 12th-grade students achieve at the "basic" level, which denotes "partial mastery" of subject matter, and only 11 percent reach the "proficient" level.

Some point to the high number of students going on to college as a sign that youngsters emerge from high school well prepared. These numbers are deceiving. Although more than 60 percent of American high school graduates go on to higher education (a high number compared to most foreign countries), many end up dropping out before getting a degree. It takes seven years for approximately 50 percent of college entrants to earn a degree.

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The poor preparation of high school graduates is further illustrated by the proliferation of remedial courses at colleges and universities across the country. Ninety percent of postsecondary institutions now offer remedial courses. That's nine out of ten colleges teaching the equivalent of high school courses. According to the American Council on Education, one-third of college freshmen took remedial math courses in 1994, and over one-quarter of freshmen took remedial English. In California, 60 percent of incoming freshmen to the largest state university system in the country tested low enough in math and English that they were required to take remedial courses.

Perhaps the strongest evidence that high school graduates are not well prepared comes from employers. A 1991 Harris poll asked parents, students and employers whether high school graduates were well prepared in reading, writing and math. Large numbers of parents and students said yes--71 percent and 63 percent, respectively--but only 21 percent of employers agreed. In fact, businesses have found it increasingly necessary to provide employees with remedial educational training. According to a survey for *Training* magazine, 18 percent of American businesses provided remedial education training for employees in 1984. By 1995, that figure had jumped to 43 percent.

Bad for the Economy

When high school graduates aren't prepared to enter the workforce, it takes a toll not only on them but also on businesses and the broader economy. As more and more American businesses face stiff global competition, jobs have become more demanding, and the need for well-educated, well-trained employees has increased. According to a 1995 survey by the Education Quality of the Workforce (EQW) policy group, 56 percent of employers reported that the skill requirements for their jobs were increasing; only 5 percent said they were decreasing.

But businesses are having a hard time finding workers with the knowledge and experience to fill these jobs. One-third of the corporations surveyed by EQW said that they had trouble finding skilled labor. And the problem is just as real for small- and mid-sized businesses. A recent survey by Arthur Andersen found that 25 percent of such business owners worried that a lack of qualified workers will soon hamper their growth, a figure that has nearly doubled from 13 percent in 1993.

Who Is Hurt the Most?

The low level of achievement in American schools is a problem for the American economy. But it is a tragedy for the students who do not meet their potential, particularly those students who don't go on to get a college degree. In the typical American high school, students planning on attending selective colleges enter the "college-preparatory" track and take a certain set of core academic courses. While these courses are not always as rigorous as those taken by college-bound students in other high-achieving countries, the college-prep curriculum does open the doors to a college education, and those four additional years of learning open even more doors. Moreover, students entering selective colleges have a strong incentive not only to take rigorous courses but also to study hard and earn good grades: If they don't, they won't be admitted.

The picture is much different for those who do not go on to earn a college degree after high school. These students may have to earn a certain number of credits to graduate from high school, but they are rarely required by the school to take rigorous courses or to master complicated academic material. Additionally, there is no external incentive spurring them on to take difficult courses or undertake the diligent study and constant practice that is neccesary to master complex material. Most two-year colleges, and over 12 percent of four-year colleges and universities, have an open admissions policy under which they admit high school graduates regardless of their high school rank or test scores. For students who intend to enter the workforce directly after high school, there is no pay-off for studying. Employers may care about whether a student has received a high school diploma, but they don't ask what grades students received or whether students earned those grades in the most basic courses or the most advanced.

To a great extent, these students are not challenged or motivated by school, nor do they leave prepared for any particular career or occupation. The result is that some high school graduates end up unemployed, and many others find themselves jumping from one low-paying job to the next in search of skills and stability until the age of 23 or 24.

Perhaps most scandalous is that these youngsters are led to believe they are being prepared to step out into the world. They are told that all they need to do is earn a certain number of credits to graduate, so they do. Some even get good grades in their courses, leading them to believe that they are learning what they will need to be successful. Reality doesn't set in until after they receive their diploma and it is too late to go back and learn what they were never exposed to. In essence, those who rely the most on their high school education get the least out of it, and they don't realize what they are missing until it is too late.

The Promise of Standards

For several years, there has been an emerging consensus among educators, business leaders and policy makers nationwide that the first step to changing how we educate children is setting higher academic standards from kindergarten through 12th grade. Just as businesses can't measure improvements in production without knowing what they want their products to look like, schools can't change without first determining what they want children to learn.

This was the message early in 1996 at the second National Education Summit, when governors and business leaders came together to show their commitment to raising standards in schools. They agreed that schools must set higher standards for students in their states and that states must support the kind of changes that will help students reach those standards.

But offering harder courses doesn't guarantee success. For students who have not traditionally sought out and done well in demanding classes, teachers will need better instructional strategies based on the latest research. Schools--with help from the business community--will need to provide students with exposure to career opportunities and job skills so that youth can see the relevance of what they are learning in school. Schools will also have to tie incentives and consequences to standards so that students will be motivated to work hard in school. In the end, no child should be allowed to pass from grade to grade and then graduate from high school without having learned what he will need to succeed. And both business and the postsecondary community have to send the message, through their hiring and admissions policies, that hard work in school matters: Working hard and doing well in school should lead to a good job or postsecondary opportunities. Failing to work hard should not.

School to Career

One movement that has the potential to bring together the high standards, proven instructional strategies, exposure to work and incentives for study is referred to by many as "school to work." The idea is to ratchet up the academic preparation students receive in high school while increasing their exposure to the world of work.

Because it speaks to both the academic needs of students and their need for work skills and experience, school to work has the support of educators, organized labor and the business community. It also has support from the federal government. The School-to-Work Opportunities Act, signed into federal law in 1994, provides seed money for state and local systems to develop new programs that will better prepare students for life after high school. As a result of this legislation, education groups, teachers, business organizations and labor unions are working together at the national, state and local levels to come up with the right mix of academic standards, career connections, supports and incentives for students to achieve.

In our judgment, the challenge of the school-to-work movement is to focus on providing an upgraded education to those youngsters who have traditionally been so ill served by high school and to prepare them for a productive life. In part, this means preparing them to enter a career and earn a successful

living. But that is not all. A good liberal arts education has a fundamental a role to play in preparing young people to live responsible lives as democratic citizens and to live intellectually fulfilling lives where learning becomes its own reward. Of course, we want high school graduates to understand how what they are learning in school will benefit their careers. The economic payoff of a good education is one of the most significant incentives for students to work hard. But as teachers, we feel a deep devotion to the civic and social values of a good education. As one newspaper columnist recently put it: "Education aims to enrich lives, not just line pockets."

The Purpose of this Publication

School to work is a powerful idea. But as the idea becomes more popular, the school-to-work label will become attached to a great variety of programs--not all of them with the same purpose or quality.

While many of the reforms undertaken in the name of school to work are solid and will greatly help students now ill served by the system, others could leave schools and students worse off. If, for example, school-to-work proposals lead to a focus on narrow job skills or more specialized vocational training that displaces strong academic preparation, we will be doing our students and our society a disservice. If, in our zeal to prepare more youngsters for jobs after high school, we end up closing the door to college, that would be a step backward. If, as we work to make the curriculum and pedagogy more relevant to students, we compromise the quality of the academic content students are exposed to, we will have only made the situation worse. And if, in the name of school to work, we end up dismantling or weakening the academic preparation that is now offered in college-prep programs, we may solve one problem but will create another.

School to work has the potential to dramatically improve education for those students who have traditionally been left uninspired and unprepared by high school. We believe that school to work can best serve these students by creating an educational experience for them that includes the recommended features below. These recommendations are based on the premise that a strong liberal arts education is the foundation for the future success of all students, and only when our schools can provide students with such an education will we be giving them a real chance at fulfilling, productive, successful lives.

The seven recommendations call for the following:

1) provide a common, high-quality, rich curriculum to all students--regardless of their ability, background or likely life choices--well into secondary school, thus providing the foundation for a demanding high school education;

2) expose all high school students to rigorous academic coursework in all core subjects, not allowing non college-bound students to settle for "remedial" or undemanding "general"-level courses;

3) use effective, engaging teaching methods, including a heavier dose of applied learning;

4) provide students with exposure to the workplace--in ways that reinforce and show the relevance of academic learning;

5) create incentives for students to study and achieve;

6) provide training and support for teachers; and

7) regularly evaluate whether the programs are leading to improved student achievement.

From now on in this publication, we will use the term "school to career" rather than "school to work" to help make a very important point. We are not arguing for narrow vocational education programs that only prepare students for specific jobs. The American Federation of Teachers' vision of school to career calls for providing students with the solid academic foundation that can enable them to go on to college if they choose, enter quality postsecondary training and degree programs, and retrain easily for other

jobs should a shift in the labor market occur or an opportunity for promotion present itself. It involves helping those students who are now so ill served by our system to meet rigorous academic standards and to understand the connection between success in school and success in their careers. "School to career" seems to us a more accurate description of our broader vision.

Recommendations

Recommendation #1

Provide all students with a strong academic foundation prior to high school

In American education today, there are no common academic standards that students are expected to meet. Students in different schools learn different things and are held to different expectations. Students in some schools are taught a challenging curriculum and are held to high standards. Students in many other schools are not, and the low expectations seem to affect disproportionately children in poor neighborhoods.

This lack of clear standards has led to a system where students pass from grade to grade regardless of what they have learned. In a recent AFT poll, nearly three out of five teachers said that students arrive in their classrooms at the beginning of each year at such different levels of preparation that the teachers must spend significant time reviewing old material so that the less-prepared students are not left behind. The problem is particularly serious in urban schools, where 70 percent of teachers report having to spend considerable time at the beginning of the year bringing students to the same level.

If we want to improve the quality of the high school experience for the majority of our young people, if we want to be able to do away with low-level courses and dead-end tracks, we need to begin by setting clear, rigorous academic standards and making sure students meet those standards from the earliest grades on.

This means that every state should establish a common core curriculum for all students. The content of that curriculum--what students should learn in each subject and each grade--should be clearly defined so that students receive consistent, coordinated instruction as they progress through the system. And students should not be passed from grade to grade unless they have learned the material in the curriculum. In other words, every sixth-grade teacher should know that incoming students have substantially mastered the knowledge and skills of the fifth-grade curriculum, regardless of which teacher or school they came from. And it is that teacher's responsibility to make sure those students have learned the sixth-grade material before moving to the seventh grade.

An essential ingredient of such a system is targeted assistance and intervention for low-achieving students. With higher standards and a challenging curriculum, it is inevitable that some students will struggle with the material. Once standards are in place, the emphasis can be on early identification of learning problems. Teachers can assess whether students are reaching the set standard with standardized diagnostic tests or other tools. Resources--tutors, instructional materials that use different pedagogical techniques, additional time, and guides that enable parents to help students at home--can then be made available to provide the extra instruction the students need.

Another ingredient of a successful standards system is incentives to work hard. In high-achieving foreign countries, such as France and Japan, students follow a common core curriculum from elementary school until high school; they then take a series of tests to determine how well they have learned the common core prior to entering high school. Although students who fail these tests are not denied entering high school, students know that their achievement on these tests has a major impact on their future. They also know that good jobs and admission to college will require taking certain courses in high school and meeting certain standards at the end of high school. And they understand that in order to

take the more demanding courses in high school, they will have to score high enough on the tests at the end of middle school.

The AFT believes that all students should be expected to reach a common set of academic standards by the time they reach high school. This is the only way to be sure they are prepared to take rigorous courses and reach the high exit standards all high schools should establish. To ensure that students are not socially promoted into high school, states may want to consider initiating gateway tests similar to those used in other countries at the end of middle school. Students who don't do well on these tests should receive extra help; they should have second and third chances to achieve the standards.

Without clear and rigorous standards in place, and without incentives for students to care about those standards, many students will not receive a challenging curriculum, and many will continue to move from grade to grade without accumulating the knowledge and skills they will need to be successful in high school and beyond. We can't expect high schools to magically solve the achievement problem without support from the earlier grades. This is why schools and school systems that are serious about preparing youngsters for work and citizenship when they graduate from high school must make sure that changes extend all the way down to the elementary grades.

Recommendation #2

Expose all secondary students to rigorous academic coursework in all core subjects

The primary goal of a high school's school-to-career program should be to help all students master challenging academic material, a foundation that can prepare them for work, citizenship and life. The first step is to expose all students to tougher academic courses. In the typical high school, it is only those students planning on attending selective colleges and universities who are expected to master a challenging curriculum. These students take algebra, geometry, trigonometry and sometimes calculus; they take biology, chemistry and physics; they take "honors" or AP history courses; and they take honors or AP English courses, which require them to read great works of literature and write essays and research papers.

But most students confront an unchallenging curriculum. Some students take and get credit for "remedial" or "basic" courses. These courses--often with names like business and consumer math, consumer chemistry and outdoor education--offer little academic content and virtually no preparation for either work or postsecondary education. The largest number of students take what are often called "general" track courses. These courses are far more challenging than the remedial courses, far less challenging than AP courses, and, most significantly, far less challenging than the courses taken by students in other industrialized countries where student achievement is much higher. These students may take geometry, but not algebra. They may take biology, but not chemistry or physics. They take four years of English, but their classes may avoid great works of literature and the writing of papers in favor of a focus on adolescent fiction or contemporary film. They may take three or four years of social studies, but most of it on narrow "topics" and little of it in broad, rigorous history courses.

Eliminate remedial courses, upgrade "general" courses

Students who take remedial and general courses get a diploma but end up with a weak academic foundation. Many of these students enter college, but end up paying to take remedial courses covering material they should have learned in high school. Many also end up dropping out of college without a degree. Those who enter the workforce learn quickly that they are not adequately prepared for high-skilled work or to take advantage of better employment opportunities. In today's economy, even high-paying factory jobs require more skills and knowledge than many general-track students are ever exposed to.

This story from the *Wall Street Journal* illustrates the academic background students need to get good jobs--and the frustration they experience without it.

Andre Miles has applied for a job at Lincoln Electric Co. three times in the past three years, but he has never gotten past a screening interview.

"It is frustrating that I don't even have a chance," says the 22-year-old construction worker. He isn't alone. More than 20,000 applications have been submitted to Lincoln in the past 18 months, and most were rejected. Yet, the maker of motors and welding products says it still has positions to fill and can't find the workers it needs.

. . .Lincoln currently has about 200 openings, with hourly pay ranging from $8.39 to $20. While some openings are at the lowest rung of the plant, the company also needs many skilled tool-and-die makers, mold makers and machinists.

. . .But few of the thousands of applicants who applied for jobs at Lincoln could do high-school trigonometry or read technical drawings, and most didn't show an aptitude for learning how to operate computer-controlled machines--skills that Lincoln says even entry-level workers need.

. . .Mr. Miles, the 22-year-old repeatedly turned away at Lincoln, says he thinks his 2.6 grade-point average in high school "wasn't too shabby." In school, he played football and worked part-time at a Kentucky Fried Chicken restaurant, but took just one basic algebra course. Today, he wishes he had taken more math.

"If I knew then what I know now, I would have acted differently," he says, noting that Lincoln's starting salary is more than the $7.50 an hour he makes after two years of unskilled construction work. "If I got that job [at Lincoln], at least I wouldn't have to wear the same tennis shoes for two years.". . .

But students need more than just high-level math and science courses. A special report from the National Alliance of Business argues that it's time to abandon "the simplistic notion that preparation for work requires only a set of technical skills, while thoughtful citizenship requires knowledge and understanding cultivated by the arts and humanities. Perhaps this rigid dichotomy made sense in the Industrial era, but no longer." The paper goes on to argue that "high-powered study in traditional disciplines such as science, history, the arts, civics and foreign language "can enhance young people's readiness for today's job market" **(see sidebar).** **#/**

But even were there is no economic rationale for it, all students need and deserve exposure to a broad, rich liberal arts curriculum. In his book *The Schools We Need*, E.D. Hirsch calls access to such a curriculum a basic civil right. He argues that every child in America ought to be guaranteed more than just a seat in a public school; they should be given access to a rich curriculum that can enable them to participate and prosper in American society. Mortimer Adler, founder of the Paideia schools, made the same argument in *The Paideia Proposal:*

"We cannot say out of one side of our mouth that we are for democracy and all its free institutions including, preeminently, political and civil liberty for all; and out of the other side of our mouth, say that only some of the children...are educable for full citizenship and a full human life." (p. 7)

This is the philosophy driving many successful school-to-career systems in American schools. The Southern Regional Education Board's (SREB) High Schools That Work consortium is one such example. That program, in 650 schools, rejects the practice of "teaching different academic content to different students within the same school."

SREB schools eliminate general math classes and require all students to learn algebra and geometry. For example, one SREB school eliminated general math from the high school curriculum, moved pre-algebra to the middle school level, and no longer allowed students to count business math toward graduation. SREB schools also eliminate low-level English courses and require all students to take a core curriculum with a strong literature component and a heavy emphasis on writing. One school requires students in every grade to write a formal paper each week.

The Turner Technical Arts school in Dade County, Florida, provides an example of a school-to-career system built on a strong academic core curriculum. Like the SREB schools, Turner has done away with low-level courses. All Turner students are required to take four years of English and three years of social studies at levels universities would accept as prerequisites for entry; all students are required to take math courses up through algebra, and many--depending on their career focus--are also required to take Algebra II and rigorous science courses, such as chemistry and physics, typically taken only by the

college bound.

The point, of course, is not simply to change the names of the courses but to strengthen content. How do you know if new courses are as rigorous as they should be? There is no simple formula. There are, however, three measures schools can use to help answer this question:

- Compare the content and expectations of upgraded courses with courses and exams taken by average-achieving students in other high-achieving countries **(see sidebar)** # 2
- Make sure courses are sufficient for entry to state universities so that students do not require remediation; and
- Assess students' achievement in the new courses as compared to their achievement in the old courses. If the course content is strong, achievement should go up.

Students can meet higher standards

Some people just assume that tougher course requirements will lead to a higher drop-out rate and more failure. But the experience of schools that have tried it--including those in the SREB consortium--shows the opposite.

Research conducted by Andrew Porter et al. on the effect of transition courses designed to move students from general math to college preparatory math in New York and California show that the more students are exposed to rigorous content, the higher they achieve on the National Assessment of Educational Progress's math test. In the case of "stretch Regents" courses in New York state--courses that teach students the same material as the college-track Regents courses but take either an extra semester or year to complete--New York City students' NAEP gains after one year nearly doubled those of students in general math courses.

Recommendation #3

Use effective and engaging teaching methods

One promising approach, which many in the school-to-career field advocate, is greater use of "applied" learning, wherein students use what they have learned in real-world contexts. One obvious strength of applied learning is to capture students' interest and thus motivate them by showing the relevance and usefulness of what they are learning. It can be a very effective way to motivate students to learn complex academic concepts.

The success of this approach is supported by research from the field of cognitive psychology on contextualized learning. These findings document the educational usefulness of having students work through, and come to understand, complicated material by drawing on prior learning to solve a variety of different problems.

The Center for Occupational Research and Development (CORD) offers a Principles of Technology course based on applied learning. Traditional physics programs use three steps to introduce students to such concepts as the conversion of potential energy to kinetic energy. First, discuss the concept; second, present an equation that describes the phenomenon; and third, offer students a few simple exercises to apply the new concept.

The Principles of Technology course does all of this and then allows the student to explore the principle in action; to see, for example, how a car's coil spring works to provide a smooth ride. The course then provides opportunities for students to explore the same concept at work in many situations--in pressure regulators, brake retracting springs, safety valves--helping them understand the broad applicability of a scientific concept. **See sidebar for an example.** # 3

This approach to academic topics takes more time than the traditional method of teaching. The CORD physics course takes two years to cover what traditionally is taught in one year of physics. But for

students who otherwise might not complete the physics course--or who might complete it but not fully understand what they've been taught--the extra time is well spent.

Sometimes people only think of math and science as subjects in which students can benefit from this type of learning experience. The truth is, some of the best history and government classes engage in a form of this practice. Take mock law trials, for instance, where students are given a case to study and asked to apply their knowledge of the law to the roles of prosecutor, defense attorney, judge and witnesses. Or consider the model United Nations program, which places students in the roles of ambassadors and engages them in mock U.N. hearings and debates. These roles require students to do their own research and to develop a fairly sophisticated understanding of international events, such as the Vietnam War or the Cuban Missile Crisis. And because all students are expected to participate, it is harder for those having trouble with the material to slip by unnoticed.

But just because a healthy dose of applied learning will aid many students' education doesn't mean all teachers should use applied learning all the time. And just because applied learning done well is educationally powerful doesn't mean that any classroom activity called applied or "hands on" necessarily is. As with any educational methodology, applied learning must be incorporated into the curriculum thoughtfully and moderately, using good materials and good instruction. Here are several principles educators need to keep in mind as they work to incorporate applied learning into their repertoire:

- **Applied learning is a means to an end: improved academic achievement.** Applied courses and lessons should have as their primary goal helping to improve students' academic performance. A lesson that is fun and "relevant" to students' lives but doesn't lead students to better and more deeply understand the academic material isn't a good use of either the students' or the teacher's time. For example, a series of lessons where students spend a lot of time planting a garden but fail to grasp the concept of photosynthesis.
- **Applied lessons often take longer.** Because applied lessons and courses involve students in projects and tasks not normally incorporated into the high school curriculum, they usually take longer to complete. Choices must be made between achieving depth--which applied lessons often provide--and breadth, as both are important to a quality education.
- **Clear standards should help guide decisions about courses and pedagogy.** To assure that key topics are not lost in the effort to create applied lessons, clear standards that describe what all students ought to learn in each grade--not a desire to include particular applied lessons--should guide decisions about what material is taught in a given grade.
- **Applied learning may not always be appropriate.** Teachers shouldn't feel compelled to turn every lesson into an activity--some things simply don't lend themselves to being taught in an applied way. And some students may learn perfectly well without using applications.
- Applied lessons are not always the best way to engage students. Sometimes it can be a more compelling learning experience to read a good book or listen to a great lecture than to do something more hands on. Applied learning techniques should be part of every good teacher's repertoire, but it should not be the only methodology.

Teaching is not like building a house or cooking a meal. There is no blueprint or recipe for reaching every child in every lesson. Some students will absorb and retain information better by reading on their own or listening to their teachers; others will learn better by working out their ideas with their peers; and some by actually doing something that requires application of that knowledge in a real-world context. Most teachers achieve more with a balanced repertoire of strategies and activities.

Recommendation #4

Provide career exposure to improve academic performance and to prepare students for life after high school

As students approach graduation, serious consideration of what comes after high school emerges. The more that students believe their courses prepare them for that next step, the more likely they are to be motivated to work hard and do well in those classes. Unfortunately, most high school students today do

not see any connection between hard work in school and success after graduation. Typically, only those students applying to the more competitive colleges and universities recognize that taking tough courses and getting good grades translates into success after high school.

If we are to prepare all students for life after high school, schools need to provide direction and nurture determination. Four ways of doing so follow.

- Provide students with information about what their academic, training and work options are after graduation.
- Make clear to them the knowledge and skills required to take advantage of each option.
- Make sure that the courses and programs offered in high schools actually provide students with the knowledge and skills necessary to access each option.
- Offer students coursework that will give them advanced standing in their next learning experience.

Career Exposure

Most young people are unaware of the career options available to a high school graduate. Without programs that provide such information, their employment prospects may be limited by what their parents, relatives or friends have pursued. This is particularly debilitating for poor children whose exposure to the world of work is often very narrow.

What kind of information should schools try to provide students? It helps to look at this from the student's perspective. Here are some of the questions students should be encouraged to ask and schools should help answer--both through good guidance counseling programs and structured exposure to the work world and its connection to the classroom:

- What career fields am I most interested in?
- Will those fields provide adequate compensation to support my desired lifestyle?
- Is the career field one in which opportunities are plentiful? And what about the future--is it an expanding or a shrinking field?
- Is employment available in my community or will relocation be necessary?
- What kinds of knowledge and skills will I need to be successful in these careers?
- Will this career require additional training after high school? If so, where is the best place to receive additional training? What knowledge and skills will I need to enter these training programs?

At Laurence Dunbar High School in Fort Worth, Texas, students get these questions answered through a brief but focused job-shadowing experience **(see sidebar).** Students spend several days with a mentor at a job site participating in the day-to-day work activities and discussing the specific academic skills the job requires. Students come to the work site with a prepared list of questions that help them focus their time and discussion on how workers use academic knowledge and skills in their jobs. When they return from their job-shadowing experience, the students are expected to share what they have learned with the rest of the class.

But the career connection for Dunbar students does not end there. As a result of a joint project between the Fort Worth school district and the local chamber of commerce, Dunbar students have access to a guidebook that describes the academic and work skills required for various jobs in the community. For example, if a student is interested in becoming a nurse, the student's career counselor could open this manual and show the student the level of reading, writing, math, speaking/listening, computer and reasoning skills that nurses in the area report needing to do their jobs. Those students who are not sure what they want to do when they graduate can also consult the guide to find out what type of math or writing skills various jobs require.

Career-oriented programs and courses

There are many ways schools can organize programs to help students make the connection between academics, the world of work and life after graduation. In addition to the rigorous core curriculum

discussed earlier, schools can provide vocational courses that give students exposure to career fields; they can teach occupational skills; and they can reinforce the academic skills taught in core courses.

But how to get there from here? One avenue is simply to have vocational and academic teachers work together more closely. A particular mathematical formula or a scientific concept relevant to an auto mechanics class, for example, can be taught concurrently in academic and vocational classes. In addition, math and science teachers should draw on students' experiences in their vocational courses to help make the academic material inviting and relevant.

This kind of integration is possible only when the curriculum and standards for the academic and vocational courses are set forth explicitly, specifically and publicly. When academic and vocational teachers discuss such standards, they can identify opportunities for integration. Absent documents that detail standards clearly, integration is likely to be ad hoc, with faculty finding interesting but not necessarily pertinent ways to integrate their coursework.

There are also more elaborate ways to structure the high school experience to provide students with a career focus that can also help bring relevance to their academic studies. Some schools are creating "career pathways" or a "career focus"--a coherent, prescribed sequence of academic and vocational courses designed to provide students with a rigorous set of core academic courses while exposing them to a particular career or set of careers. These pathways are typically organized along broad occupational lines, such as health care or manufacturing/engineering technology.

This pathways approach is taken by the SREB High Schools That Work consortium. In addition to the core academic courses all students are required to take, SREB requires students to declare a "career focus" and to take additional courses. For some students, that focus may be a particular occupation or industry--health care, for example--while for others it may be admission to college. The point is not to lock students into a particular occupation but, rather, to give them a focus around which they can organize their courseload and prepare themselves for postsecondary opportunities. SREB's career focus courses, whether they deal with auto mechanics, engineering or computers, expose students to the world of work and education after high school while reinforcing the academic knowledge and skills they're studying in their core courses.

In St. Mary's County, Maryland--an SREB site--career pathway students take a core set of college-preparatory-level academic courses plus 10 semesters of additional academic and vocational courses chosen from four broad career pathways: engineering/ mechanical technology, health/human services, business/management and college preparatory.

Regardless of the pathway chosen, all St. Mary's students must take algebra, geometry and an additional higher-level math course; earth/space science and biology; and four years of what the district considers college-prep English and social studies. Depending on the pathway, students take additional vocational and academic courses that augment that pathway.

Instead of graduating without a focus, St. Mary's students are prepared to enter a four-year college or move immediately into a community college program that will lead to a well-regarded technical certificate and, in turn, to a skilled, well-paying job. And if the labor market changes, the student will have the academic foundation necessary to enter a new field and retrain for a new job. **For more details, see sidebar.** #5

Some schools are going further and creating schools-within-schools, called "career academies," which allow students to focus on a particular occupation for most of their high school years **(see sidebar).** #6 More than just a set of courses, career academies are usually created to match local employment trends and opportunities, and they are designed to prepare students to enter that trade or field after graduation. In some cases, entire schools have become career academies.

This approach can be appropriate for students interested in a particular career field and in locations where jobs in the field are plentiful. Aviation High School in New York is such a school. It requires students to take a core set of academic courses that lead to a standard academic diploma and a core set of

vocational courses in aviation mechanics and technology pegged to certification standards set by the Federal Aviation Administration. Upon graduation, Aviation students are prepared to take the FAA certification exam, which, when passed, will enable them to enter the airline industry in a high-paying job that for most people would require years of training after high school.

Work-based experiences

One popular way schools choose to expose students to career options is through job-shadowing opportunities, internships and other work-based experiences. When schools work with employers to ensure that the experience is meaningful and academically enriching for students, these opportunities can be an effective way to motivate students in their academic courses and to demonstrate the relevance of those courses to the working world. But if that academic connection is not made clearly, and the goal is simply to give students work experience, it may do youngsters more harm than good. Recent research by Laurence Steinberg and Elizabeth Cauffman indicates that as many as 66 percent of all American high school juniors and seniors work--compared with 37 percent in Canada, 20 percent in Sweden, and less than 2 percent in Japan. Working long hours, they say, often results in "disengagement from school," thereby hindering academic progress.

For a work-based learning experience to help and not hinder students' academic progress, it should:

Establish a clear academic focus--The effectiveness of a work-based experience depends on how well what the student does on the job reinforces what happens in the classroom. The academic side of the work-based experience should be explicitly stated and should relate closely to the student's academic curriculum.

Maintain the central role of the school--The student's first obligation is to master the academic curriculum in high school. The workplace experience should not impede this. Students' work experience should not substitute for academic classes, nor should students be pulled from their academic classes to attend internships. Embedding employability skills, often referred to as SCANS skills, in the curriculum is a helpful way to bridge school and the workplace. **See sidebar for a definition of the SCANS skills.** #7

Hire or appoint a work-based learning coordinator--The coordinator will take responsibility for ensuring that every internship is an academically rich experience. Too frequently, already overburdened teachers are expected to arrange the internships, maintain the contacts with the workplaces and gather labor market information. Schools must designate someone to fulfill these important duties and reduce his or her other responsibilities to free up the necessary time. Often, this role is best filled--or substantially supplemented--at the district level, where a coordinator can use contacts with various companies to arrange quality work experiences for students at a number of schools.

Assign a workplace mentor to each student--No student should spend time in an internship without guidance. Continuous mentoring should be part of every school's agreement with businesses, and mentors should be familiar enough with the academic curriculum to help students make the connection between classroom work and "real-world" work.

Students should not be used as cheap labor--Students should not be placed in work settings where they will either displace existing workers or preempt hiring a worker. Every precaution must be taken to ensure that all child labor laws and OSHA safety regulations are followed. Additionally, in work sites that are organized, the local union should be fully involved in the program.

Limit hours--To ensure that internships complement and do not detract from students' academic work, schools should limit the number of hours per week students spend in a job to no more than 20. A student's job placement should not interfere with schoolwork.

Placement should account for workplace environment--Internships must be based on the needs of students, not the labor needs of employers. Students should not be placed in occupational clusters for which projections indicate long-term declines in the labor market; nor should they be placed in job sites where layoffs are prevalent. Schools must also make sure that student placements do not displace or

otherwise have a negative impact on existing workers.

Recommendation #5

Create an incentive for students to study and achieve: Make the high school diploma count

Most American students could achieve at much higher levels. Such increased achievement can only occur, however, if students are willing to work harder than they do today. In a recent poll, AFT teachers listed "lack of student motivation" as one of the top three problems they face in their schools.

One reason students lack the motivation necessary for them to take challenging courses and excel in their studies is that they do not believe hard work in high school will influence their futures in any meaningful way. They know that most employers will not ask to see their high school transcript--so why should they put in the extra effort? For many of these youngsters, the diploma remains the biggest incentive for staying in school and completing the requisite courses. It is their minimum ticket to a career and entry into a community college, the military or a vocational program.

But the truth is, most high school diplomas don't signify much more than attendance. Students have to show up for a certain number of days per year and "pass" a certain number of courses, but that's about it. A high school diploma these days cannot be viewed as a certificate of academic mastery, and employers know it. That's why quality businesses rarely hire recent high school graduates. Instead, they wait until those graduates have several years of experience in low-wage jobs or they hire people with college degrees or certificates from training programs.

In other countries, the certificates students receive when they exit high school are valuable and carry a clear message to colleges and employers. A *Realschule* certificate in Germany represents a known and significant level of academic achievement. It can lead to immediate entry into high-skilled careers or access to the best training programs. An academic *Baccalaureat* diploma in France guarantees entry to a four-year college. A technical *Baccalaureat* is necessary to enter serious job-training programs and careers.

The main reason these certificates carry so much weight is that students have to earn them. Students can't receive their diploma without having taken a core set of academic courses and without having met challenging standards. This means more than simply racking up course credits. In most cases, students have to pass rigorous tests at the end of high school to demonstrate their command of the material. And the grades they get in their courses are often a significant factor in their final score.

To increase the status of the diploma in American high schools, and to make it worth striving for, schools need to make the diploma stand for something. Students should not receive a diploma if they haven't reached clearly defined, rigorous academic standards. The elimination of remedial courses and the upgrading of general courses discussed earlier pave the way for this, but it may also be necessary to require students to demonstrate their mastery on formal exams.

Schools should also consider a differentiated diploma system that would encourage students to focus their studies in their later high school years. During the last several years of secondary school in France, for example, students decide whether they will pursue an academic Baccalaureat that will prepare them for college or one of a variety of technical Baccalaureat degrees that will prepare them to enter various careers or job-training programs. Students who finish each of these programs take a set of exams in academic subjects and in more specialized areas, and those who pass the exams receive a diploma specific to their domain. An academic diploma entitles students to attend a university (they cannot be admitted without one), and a technical Baccalaureat opens the door to a particular range of careers. As mentioned earlier, employers respect these certificates and factor them into their hiring decisions.

In this country, several states are designing systems of standards and exams that will lead to differentiated diplomas in high school. In one state, for example, students will be required to take tests

and meet certain standards in the core academic subjects at the end of tenth grade. Students who do not pass these tests will be given second and third chances, but they must pass the tests in order to graduate. Once students pass the tenth-grade tests, they will have an opportunity to work toward two different types of diplomas, each connected to a set of standards. One pathway will lead to a certificate of advanced academic mastery, which will signify preparation for postsecondary education. The other path will lead to a more career-oriented technical certificate that will open the doors to good jobs and quality training programs.

States that establish tough graduation standards and offer advanced certificates are sending the right message: achievement counts.

Link College Entry and Employment to Student Achievement

Putting higher standards in place and encouraging students to work hard and plan ahead in high school will not be easy, and schools cannot do it alone. Colleges and universities should institute admissions standards that make it clear to students that they must take serious courses and succeed at them if they intend to enter college. Employers, too, must make it a practice to reward academic achievement. At the National Education Summit, governors and business leaders agreed that business should implement hiring practices "that will require applicants to demonstrate academic achievement through school-based records, such as academic transcripts, diplomas, portfolios, certificates of initial mastery and others as appropriate." Employers of high school students should also consider rewarding their student employees who earn high grades with contributions to funds for the students and other incentives. Contact the National Alliance of Business for information on their efforts to motivate students to work hard in school.

Schools can ensure that transcripts, grades and graduation certificates actually stand for something; employers and higher education institutions have the power to make high standards worth reaching. For this reason, school-to-career programs must begin early and energetically to enlist employers and higher education institutions to reward high achievement. For an example of how one school district is doing this, **see sidebar.** # 8

Recommendation #6

Provide quality professional development

Implementing the recommendations laid out in this publication will demand more of educators than ever before. They will need a deeper knowledge of subject matter, a better understanding of the array of teaching strategies that will help students meet higher academic standards, and a commitment to working closely with colleagues to design rich learning activities that connect school to the world of work. None of this can happen, however, without quality professional development.

Professional development must be a dynamic process that requires educators to continually reflect on their teaching, strengthen their knowledge of subject matter and perfect their pedagogical skills. Dynamic professional development will:

Deepen educators' subject matter knowledge—As the standards in courses are raised and watered-down courses eliminated, students will be taking more advanced courses and will be expected to learn more. Many teachers who have become familiar with teaching lower-level courses will shift to teaching higher-level courses. Therefore, educators will need to deepen their content knowledge in order to teach complex subject matter.

Expand educators' repertoire of teaching strategies—As noted earlier, lifting the achievement of students who have not traditionally flourished in school will require teachers to draw on a broader range of effective teaching strategies, including more use of applied learning. Teachers will need exposure to these techniques, including an understanding of how, why and under what circumstances they are effective. It is essential for teachers to understand the research that supports the new teaching practices.

But, that alone is not sufficient. Teachers cannot be expected, based on abstract theory, to invent a year's worth of new lessons from whole cloth. Rather, excellent collections of lessons, units and courses that incorporate applied learning should be made available to teachers. Professional development should be substantially focused on enabling teachers to effectively use and build on these materials. At its best, this kind of professional development will include time for teachers to brainstorm and talk with colleagues about their experiences. This will need to be done in a way that engages educators in learning about and studying their own teaching in order to perfect their methods. Teachers will also need release time to observe quality teaching by their peers.

Be an on-going, coordinated effort--The evidence is overwhelming that the most effective professional development programs are those that provide opportunities for teachers to learn something new, to practice it in the classroom, and to receive coaching on it. One-shot trainings that assume that knowing something new means you can and will successfully apply it in the classroom will not fill the bill. Educators will need to continue to share their successes and failures and fine tune their methodologies as students and curriculum change.

Allow time for collaboration between academic and vocational teachers--Reinforcement of academic content by vocational teachers, use of vocational examples by academic teachers and the alignment and sequencing of course content cannot happen between academic and vocational teachers if they do not have joint planning time. With such time, and with such a focus, academic and vocational teachers can discover the connections between their courses and can align lessons to reinforce different concepts. For example, a math and a carpentry teacher can align their curriculum so that students learn a particular math formula and then apply the formula in a carpentry project.

Be a priority for the school, district or regional entity--Professional development initiations will not work unless the time and resources are available for teachers to observe exemplary teaching and work collegially to upgrade their skills. Japanese teachers, for example, spend roughly 40 percent of their working day on professional development and collegial work, compared with only 14 percent for American teachers.

Offer paid summer internships and other opportunities to teachers--Frequently, educators have not had exposure to workplaces and are not familiar with the level of knowledge and skills that so many jobs now require. Internships with local businesses will allow educators to observe employees using academic skills in today's workplaces. This allows educators to speak credibly and with rich examples about the relevance of students' academic study to their future careers. These experiences empower educators to answer students' eternal question: "Why do I need to know this?"

Recommendation #7

Use student achievement data to regularly evaluate progress

Anytime a school institutes broad changes in the way it educates children, people begin to pay close attention. Parents get concerned that their children might suffer, school boards and other politicians worry about being held accountable, and those who prefer the status quo will always be looking for reasons to call the reforms a failure and get back to the way things were. If schools are committed to making long-term changes, they need to be able to demonstrate that their new programs are working. They also need reliable information to help them make improvements and adjustments along the way.

Implementing reform is a complicated matter. Goals need to be clearly specified and efforts made to monitor progress toward meeting them. Evaluation serves several functions: It can be used to determine if:

- the program as designed is actually being implemented,
- the program, or one of its features, needs adjustment,
- the program is meeting the goals for which it is intended, and
- there are no adverse consequences associated with the program.

As we have stressed throughout this publication, the primary focus of every good high school program--and therefore of good school-to-career programs--should be to help all students meet challenging academic standards. It follows, then, that schools need a reliable method of collecting and analyzing student achievement data. There are a variety of data that can be collected that will have an impact on students' academic progress and will help schools with internal planning--course enrollment data, attendance rates, teachers' grades--but the most important and credible data will come from external assessments. If students are not already required to take state or local tests tied to clear academic standards, schools, themselves, should require it.

At a minimum, school-to-career programs should be examining the following questions to determine whether their programs are effective and how they might be improved:

- Do graduates demonstrate academic proficiency as measured by state tests of academic performance in the core disciplines, English, mathematics, science and social studies?
- Do employers find that the graduates of school-to-career programs have the requisite basic skills for entry-level positions?
- Do technical training programs find that graduates of school-to-career programs are prepared to benefit from the advanced training they have to offer?
- How many students go to four-year colleges? How many complete college and receive their degree? How many go to technical schools and community colleges, and where do they go from there? How many get jobs right out of high school in their career field? What salaries are they earning? How many need to take remedial courses in college or on the job?

There are, of course, a host of questions that an on-going evaluation of such programs could, and should, address, including issues related to faculty professional development, curriculum relevance, student satisfaction and the like. What is most important is the orientation of program administrators toward continually monitoring progress in implementing the program, making required adjustments, and examining student outcomes--both academic and job related--to assure that the program is meeting the goals for which it was designed.

In order to determine whether a program should be expanded to additional sites, an evaluation should address the following question:

- Is this reform program more effective than the existing programs for students not previously enrolled in college-prep programs in assuring that students reach high academic standards and have the skills and knowledge necessary to enter postsecondary training, college or the quality job market?

To answer that question, the evaluation must be properly designed to assure that the reform program students and the "traditional" program students are comparable in regard to characteristics known to be related to achievement, i.e., gender, poverty level and ethnicity, and that their achievement levels prior to receiving the programs--traditional or reform--were the same.

Conclusion

Just as it takes money to make money, it takes knowledge to make knowledge. 'For whoever hath, to him shall be given, and he shall have more abundance; but whoever hath not, from him shall be taken away even that he hath' (Matthew 13:12). The paradox holds more inexorably for the intellectual than for money capital. Those who are well educated can make money without inherited wealth, but those who lack intellectual capital are left poor, indeed.

--E. D. Hirsch Jr., 1996

America is known around the world as the land of liberty and opportunity. Immigrants arrive in this

country every day hoping for a chance to participate in a free society and pursue the American dream. Not everyone begins on a level playing field in this country, but our system of public education should ensure that with hard work and a commitment to learning, everyone has an equal chance to lead a productive, successful life.

It is safe to say that right now our education system is not living up to this ideal. Research shows that those students who go on to get a college degree after high school are more likely to find good jobs and earn a decent living. But the majority of high school graduates do not end up receiving a four-year degree, and although some schools are doing a good job providing these students with the academic and work preparation they will need to be successful after high school, many schools are not. This underserved majority of students can benefit greatly from well-designed school-to-career initiatives.

The recommended features of school-to-career that are discussed in this report grow from two related premises: that for the good of our nation's economy and because it's right for our youth, these students should get a far more rigorous, broad academic education than they are now getting; such an education is the best preparation any student can get for further education, for life *and* for work.

And, the twin premise: For many high school students, especially those not successfully enrolled in a rigorous college prep program, the best path to this goal will include a continuing effort to connect their school learning to the jobs they're hoping to hold and the lives they're hoping to lead--something that will be aided by a generous helping of applied learning and exposure to the work world.

We believe that this perspective is the best starting point for designing school-to-career initiatives. As states, communities and schools look to establish school-to-career programs, they need to be sure that the work preparation goal does not supersede the academic goal. Reforms whose sole intention is to prepare students for jobs are missing the mark. High school graduates without a firm grounding in the core academic subjects will not be well-rounded, versatile employees. They will not possess the knowledge and skills they need to change careers or take advantage of new opportunities within their chosen fields. And they will have been denied the opportunity to fully exercise their intellects and know the satisfaction of learning for its own sake. On the flip side, youngsters who have met high academic standards by the end of high school--who have analyzed historical events, who have conceived and executed scientific experiments, who have discussed the meaning of great art, literature, and music, who have mastered algebra and geometry--will enter the job market with the knowledge and skills they need to succeed.

With the right combination of support and incentives, we believe all students are capable of taking tougher courses and learning more demanding academic material. But for this to happen, schools, teachers and parents will have to stand firm. If students are falling behind, the response cannot be to lower the standard or to say that the student is not cut out for academics. Teachers may need to consider new teaching approaches to reach these students, and schools may need to require students to stay after hours for tutoring. And parents will need to support this stance. Struggling students need to be given extra help, not excuses.

In the end, the success of school-to-career reforms may hinge on the support of the business community. If schools raise their standards, but employers do not pay attention to those standards, students will see no reason to work hard. On the other hand, if employers ask to see high school transcripts and give preference in hiring to students who meet the standards, that will send a powerful message. It is time to create a system where working hard in school really does pay off. It is time for students who want to work hard to get the help they need. This is the vision of school to career that we will be working to bring to America's schools.

Bibliography

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For further information regarding the ideas put forth in this document, you may contact Dawn Krusemark of the AFT Educational Issues Department. Copies of this publication are available by sending $5 to the AFT Order Department, 555 New Jersey Avenue, N.W., Washington, DC 20001. Make checks payable to American Federation of Teachers.

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Bibliography

Adler, Mortimer J., *The Paideia Proposal: An Educational Manifesto,* New York: MacMillan, 1982.

American Federation of Teachers, *Principles for Professional Development: AFT's Guidelines for Creating Professional Development Programs that Make a Difference,* Washington, DC, 1995.

American Federation of Teachers, *What Secondary Students Abroad are Expected to Know: Gateway Exams Taken by Average-Achieving Students in France, Germany, and Scotland,* Defining World Class Standards Series, Volume 2, Washington, DC, 1995.

American Federation of Teachers, *Making Standards Matter 1996: An Annual Fifty-State Report on Efforts to Raise Academic Standards,* Washington, DC, 1996.

American Federation of Teachers, *Reaching High Standards,* National Campaign for Standards of Conduct, Standards for Achievement, Washington, DC, 1996.

American Federation of Teachers, *Setting Strong Standards: AFT's Criteria for Judging Quality and Usefulness of Student Achievement Standards,* Washington, DC, 1996.

American Federation of Teachers, *What College-Bound Students Abroad Are Expected to Know About Chemistry and Physics: Exams from England, Wales, France, Germany and Japan,* Defining World Class Standards Series, Volume 3, Washington, DC, 1996.

Anderson, John, Lynne Reder and Herbert Simon, "Situated Learning and Education," *Educational Researcher* Vol. 25, No. 4.

Arthur Andersen Enterprise Group, *Survey of Small and Mid-Sized Businesses: Trends for 1995.*

Bottoms, Gene and Deede Sharpe, *Teaching for Understanding Through Integration of Academic and Vocational Education,* Southern Regional Education Board, n.d.

Bottoms, Gene, Alice Presson, and Mary Johnson, *Making High Schools Work Through Integration of Academic and Vocational Education,* Southern Regional Education Board, Atlanta, 1992.

Bottoms, Gene and Alice Presson, *High Level Mathematics Knowledge and Skills Are Essential for Success in Work and Education. A Report on Improving Career-Bound Student's Learning: Mathematics,* High Schools That Work, Southern Regional Education Board, Atlanta, 1995.

Bottoms, Gene and Pat Mikos, *Seven Most-Improved "High Schools That Work" Sites Raise Achievement in Reading, Mathematics, and Science,* Southern Regional Education Board, 1995.

Cascio, Wayne F., "Public Investments in Training: Perspectives on Macro-Level Structural Issues and Micro-Level Delivery Systems," *EQW Working Papers,* University of Pennsylvania, 1994.

Center for Occupational Research and Development, *Principles of Technology Series. Unit Five, Teacher's Guide,* CORD Communications, Waco, TX.

Dao, James, "Regents to Insist on Passing of Board Exams for Diploma," *New York Times,* April 24, 1996.

Education Commission of the States, *Connecting Learning and Work: A Call to Action,* June 1996.

Education Writers Association, *Hands and Minds: Redefining Success in Vocational Technical Education,* Washington, DC, 1992.

Foundation for Industrial Modernization, *National Occupational Skill Standards: Computer Aided Drafting and Design,* Washington, DC, 1994.

Greenberger, Elleen and Laurence Steinberg, *When Teenagers Work: The Psychological and Social Cost of Adolescent Employment,* New York: Basic Books, 1986.

Harris, Louis & Associates, *An Assessment of American Education: The View of Employers, Higher Educators, the Public, Recent Students and Their Parents,* A poll published in September 1991.

Hart, Peter & Associates, *Academic Standards and Student Discipline: AFT Teachers Assess Their Schools,* Poll conducted for the American Federation of Teachers, October 1995.

Hirsch, E.D., Jr., *The Schools We Need and Why We Don't Have Them,* New York: Doubleday, 1996.

Jobs for the Future, *School-to-Work Toolkit. Building a Local Program: Design Elements and Best Practices from Pioneering School-to-Work Programs Across America,* March 1994.

Klerman, Jacob Alex and Lynn A. Karoly, "Young Men and the Transition to Stable Employment," *Monthly Labor Review,* August 1994.

Mendel, Richard, *The American School-to-Career Movement: A Background Paper for Policymakers and Foundation Officers,* American Youth Policy Forum, Washington, DC, 1994.

Mosle, Sara, "The Answer is National Standards," *The New York Times Magazine,* October 26, 1996.

Murnane, Richard J. and Frank Levy, *Teaching the New Basic Skills: Five Principles for Teaching Children to Thrive in a Changing Economy,* Free Press, Simon & Schuster, 1996.

Narisetti, Raju, "Job Paradox: Manufacturers Decry a Shortage of Workers While Rejecting Many," *The Wall Street Journal,* September 8, 1995.

National Alliance of Business, *Standards Mean Business,* Pre-Summit Briefing Material prepared by Nelson Smith, 1996 National Education Summit, New York, March 26-27, 1996.

National Automotive Technicians Education Foundation, *Applied Academic & Workplace Skills for Automotive Technicians,* Herndon, VA, 1995.

National Center on Education and the Economy, *America's Choice: High Skills or Low Wages! The Report of the Commission on the Skills of the American Workforce,* June 1990.

National Center on the Education Quality of the Workforce, *EQW National Employer Survey,* University of Pennsylvania, 1995.

Panasonic Foundation, *Strategies for School System Leaders on District-Level Change,* May 1996.

Porter, Andrew C. and Associates, "Reform of High School Mathematics and Science and Opportunity to Learn," *CPRE Policy Briefs,* Consortium for Policy Research in Education, September 1994

Ravitch, Diane, *National Standards in American Education: A Citizen's Guide,* Washington, DC: The Brookings Institution, 1995.

Rosenfeld, Neill S., "The Career Connection: These Students Don't Have to Be Reminded Why They're in School," *American Educator,* American Federation of Teachers, Fall 1991.

Roth, Kathleen J., "Second Thoughts About Interdisciplinary Studies," *American Educator,* American Federation of Teachers, Spring 1994.

Shanker, Albert, "Education and Productivity," Where We Stand, *New York Times,* May 5, 1996.

Shanker, Albert, "Linking School and Work," Where We Stand, *New York Times,* April 23, 1995.

Shanker, Albert, *Making Standards Count: The Case for Student Incentives,* Remarks by AFT President Albert Shanker at the Brookings Institution, Washington, DC, May 18, 1994.

Southern Regional Education Board, *Outstanding Practices for Raising the Achievement of Career-Bound High School Students,* 1993.

Southern Regional Education Board, *Integrating Vocational and Academic Education. Teleconference Participant Guide,* October 26, 1995.

Steinberg, Laurence and Elizabeth Cauffman, "The Impact of Employment on Adolescent Development," *Annals of Child Development,* Vol. 11 (1995).

Texas State Technical Institute and The Center for Occupational Research, *Needs Analysis and Curriculum Guide for Hazardous Materials Management Technician Training,* October 1990.

U.S. Department of Education, Office of Educational Research and Improvement, *NAEP 1992 Writing Report Card,* National Center for Education Statistics, Report No. 23-W01, Washington, DC, June 1994.

U.S. Department of Education, Office of Educational Research and Improvement, *NELS 1966 Second Follow-Up: Transcript Component,* National Center for Education Statistics, March 1995.

U.S. Department of Education, Office of Educational Research and Improvement, *NAEP 1994 U.S. History Report Card,* National Center for Education Statistics, Washington, DC, April 1996.

U.S. Department of Education, Office of Educational Research and Improvement, *The Condition of Education 1996,* National Center for Education Statistics, Washington, DC, June 1996.

U.S. Department of Education, Office of Education Research and Improvement, *Report in Brief: NAEP 1994 Trends in Academic Progress,* National Center for Education Statistics, Washington, DC, October 1996.

Uniform and Textile Service Association, Skills *Standards for Production Workers in the Uniform and Textile Service Industry: Building a Foundation for Higher Performance,* Washington, DC, 1995.

Urbanski, Adam, "Work Works Wonders: We Must Show Students That Diligence Pays Off," *Times-Union,* January 26, 1996.

Usiskin, Zalman, "Why is Algebra Important to Learn?" *American Educator,* American Federation of Teachers, Spring 1995.

Sidebars

/ How a Broad Education in the Liberal Arts Prepares Students for Today's Job Market

From: Standards Mean Business. Pre-Summit Briefing Material prepared by Nelson Smith for the National Alliance of Business, New York, N.Y., 1996, pp. 10-13.

Unleashing the economic power of the next generation requires a critical change in the way we think about their education.

We must raise our sights. As too many first-time jobseekers are discovering [minimum educational competence], is no longer adequate. Just getting in the door requires demonstrated achievement these days.

Moving beyond minimum competence also means abandoning the simplistic notion that preparation for work requires only a set of technical skills, while thoughtful citizenship requires knowledge and understanding cultivated by the arts and humanities. Perhaps this rigid dichotomy made sense in the Industrial Era, but no longer. Today's high-performance workplaces not only call for solid skills but also for informed judgment, alertness to the needs of customers and co-workers, and a disposition toward teamwork. Employers now seek the Good Worker and the Good Citizen in the same individual. Consider how high-powered study in some traditional disciplines can enhance young people's readiness for today's job market:

Science

While scientific discoveries from genetics to lasers have ushered in a new age of innovation, business has not pushed nearly hard enough for high-quality science programs in American schools. Yet consider the knowledge base required by new skill standards for some of the following jobs:

Maintenance Technician for Industrial Laundry: "Understand basic principles of electricity, mechanical systems, and fluid power..."

Automobile technician: "The technician must be able to...demonstrate an understanding of the kinetic and potential energy relationships that occur in valve systems, ignition systems, and other stored energy systems, such as springs and fuels, and determine efficiency."

Computer-Aided Drafting and Design: "Describe and explain light including angle of incidence and reflection, critical angle--fiber optics, diffraction, electromagnetic radiation, electromagnetic spectrum..."

Foreign Languages

Language snafus are no longer the stuff of cocktail-party humor--they've become a serious problem for American firms. If there's any doubt that foreign-language proficiency is a prerequisite for opening new markets--and prospering amid the diversity of today's domestic scene--consider the success of Language Line, launched in 1989, by AT&T, now providing simultaneous translation in 140 languages, with more than 8,000 connects per day. Co-founder Jeff Munks, who served as an advisor to the Standards for K-12 Foreign Language Instruction process, notes that language helps "open a window" for companies doing business abroad. But he worries that schools simply aren't preparing for the next generation of follow-on workers with sufficient language skills to make the most of the new opportunities.

An executive quoted in a 1994 RAND study said, "The phrase 'home country' is losing its meaning." Such a world demands a fresh look at language preparation in the schools.

The Arts

Although the arts are seen by some as a "frill," they cultivate precisely the kinds of skills and attributes

employers say they want in the high-performance workplace: teamwork, flexibility, motivation and creativity. Not only do the arts build social skills, they also correlate with intellectual development: A review of 1995 mean SAT scores shows that test-takers who had studied the arts four or more years scored 59 points higher on the verbal and 44 points higher on the math portions of the test than those with no arts coursework. According to Ronn Robinson, company director of education affairs at Boeing Corp., "A substantive education in the arts enables students to understand and exploit the 'languages' used by technology to teach all subjects--still and moving images, music, voice and other sounds that transcend the limits of literal text."

There is new evidence that early exposure to music may actually help shape cognitive functions critical to later success in mathematics and other subjects. Researchers at the University of California-Irvine say that music "excites the inherent brain patterns and enhances their use in complex reasoning tasks."

In sum, says Richard S. Gurin, CEO of Biney and Smith: "The abilities fostered by the arts and arts education--whether to see with a critical eye or bring old ideas into a new relationship--overlap the skills needed to develop new technologies and negotiate business agreements."

History

Lamenting the dismal results of a recent assessment of students' knowledge of American history, Lewis H. Lapham recently wrote that our schools "have lost the thread of the American narrative, and without that narrative, the country cannot long sustain the appearance, much less the substance, of democratic self-government...."

Apart from its essential role in providing continuity to our democratic tradition, the study of history has a more utilitarian side as well, cultivating the intellectual skills needed for insightful decision making and informed problem solving. According to the National Center for the Study of History, "Command of local and national history reveals the context of issues: Connections are drawn, external conditions are revealed; the validity of special interests are scrutinized." The student who has taken a rigorous course in world history will not only have an understanding of various cultures and civilizations--not a bad trait for doing business in emerging markets and increasingly diverse towns and cities at home--but will gain some important analytical tools: an understanding of cause and effect, a grasp of unintended consequence and the ability to read a map."

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2 Exam Questions from France and Germany
How Rigorous Should Coursework Be?

As school districts upgrade the quality of lower-level courses, they would do well to look at examples of work performed by average-achieving students from our economic competitors.

Students in France must pass exams in French, math and history/geography in order to earn a *Brevet de College* diploma. More than 60 percent of French students earn this diploma at the end of ninth grade.

In order to receive a *Realschule* certificate, tenth-grade students in Germany must achieve passing grades in all courses, pass written exams in German, math and English and two oral exams, one in history/civics and another in any of the following: religious studies, geography, physics, chemistry, biology, or a second foreign language. About 44 percent of German students receive a *Realschule* certificate, and another 25 percent exceed the standard by earning a degree from the *Gymnasium*.

The following questions are excerpts from actual exams taken by tenth graders in Germany and ninth graders in France.

1994 Baden-Württemberg Realschulen Final Examination

Mathematics

Time: 180 minutes

Working aids: Formulas, drawing instruments, and electronic pocket calculators (non-programmable!) used in classrooms are permitted.

Choose three of the following problems.

Problem 1

Wooden models are in the form of truncated square pyramids.

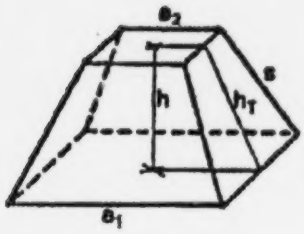
a) Model I has the dimensions:

$a_1 = 24.0$ cm

$a_2 = 14.0$ cm

$s = 18.5$ cm

Calculate the height of the side h_T, the height of the body h, the total surface area of the truncated pyramid in dm^2, and the angle between s and a_1.



b) A pyramid has been carved out in Model II. It is half the height of the truncated pyramid. The following are the dimensions:

$V_R = 1700\ cm^3$ (volume of the rest of the body)

$a_1 = 15.0$ cm

h = 12.0 cm (height of the truncated pyramid)

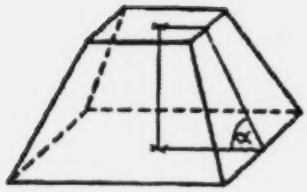
Calculate the length of edge a_2 and the surface area of the rest of the body.

c) The following are given for a truncated square pyramid:

$d_1 = 10e\sqrt{2}$ (diagonal measurement of the base)

$d_2 = 4e\sqrt{2}$ (diagonal measurement of the top)

$\partial = 60^\circ$



Demonstrate without the use of rounded values that the volume can be calculated using the formula, $V = 156e^3\sqrt{3}$.

Problem 2

a) The following is known about a body (hemisphere with truncated cone):

$M_1 = 1000\ cm^2$ (surface area of the hemisphere)

$d_2 = 15.2$ cm

$s = 11.8$ cm

1993 Académie de Caen Diplome National Du Brevet

History-Geography

Time: 2 hours

Grading Scale: Part 1: 18 points
Part 2: 14 points
Part 3: 4 points
Spelling, format, neatness, handwriting: 4 points
Total points: 40

PART 2: History and Civic Education (14 points)

Respond to one of the following topics.

Organize your answer with an introduction and a developed text. Edit your conclusion, which will be evaluated when your answer is corrected.

1. The Causes of the First World War

First, explain the indirect causes (imperialism and nationalism) which facilitated the appearance of European

networks of alliances. Briefly describe these networks. Next, tell how the crisis at Sarajevo was directly responsible for the First World War.

2. Decolonization of France (1945-1962)

Within the structure of the French colonial empire, note and discuss:

--the origins of the decolonization movements

--the different forms of decolonization: an example of peaceful decolonization and an example of a struggle for liberation

--the political, economic and demographic consequences of decolonization for France

3. The Constitution of the Fifth Republic

In the first part, after defining the word "constitution," indicate by whom and under what circumstances the constitution of the Fifth Republic was put into place.

In the second part, list the principal powers of the president of the Republic and those of the prime minister.

In the last part, characterize Parliament and its powers.

#3 How an Applied Approach Can Help More Students Learn Physics

This lesson has been abstracted from the Energy Unit of the Principles of Technology course developed by the Center for Occupational Research and Development (CORD). The Teachers Guide provides a set of sub-unit objectives and suggested ways to teach the content. Following the introduction of new concepts, students solve real-world problems using the new concepts. In some cases, these problems also reinforce previously learned material.

The following are objectives for students. The exercise that follows illustrates a real-world problem students are asked to solve to reinforce the learning of Objective 3.

Unit 5 Energy
Sub-unit 1

Energy in Mechanical and Fluid Systems I

Sub-unit Objectives

When you've finished reading this sub-unit and viewing the video, "Energy in Mechanical and Fluid Systems I," you should be able to do the following:

1. Distinguish between gravitational potential energy and elastic potential energy.

2. Calculate gravitational potential energy. Use the formula, $E_p = wh$.

3. Calculate elastic potential energy. Use the formula, $Ep = \frac{1}{2}kd^2$.

4. Calculate a spring constant. Use the formula $k = F/d$.

5. Calculate fluid potential energy. Use SI units and English units.

6. Measure potential energy (E_p).

7. Identify workplace applications where technicians measure and control potential energy.

What's an everyday use of elastic potential energy? The smooth ride we feel while driving an automobile over a bumpy road is made possible by automobile shock absorbers and coil springs. (See Figure 5-9.)

In the normal-ride position shown in Figure 5-9a, the coil spring is partly compressed by the weight of the car. The spring has stored elastic potential energy. This energy makes the spring extend (or lengthen) as the wheel moves from level pavement to the pothole (Figure 5-9b). As the wheel rolls out of the pothole onto the pavement, the spring compresses back to the normal-ride position. The important point here is that the spring changes its length as the car rides over the pothole. But the body of the car remains more or less level.

Similarly, when the wheel rolls onto a bump or rock in the road as in Figure 5-9c, the spring compresses beyond its normal-ride position. This also increases the elastic potential energy in the spring. As the wheel rolls off the rock, the elastic potential energy in the spring makes the spring return to its normal position (when the car is on even pavement). Again, the spring does the moving while the body of the car remains level.

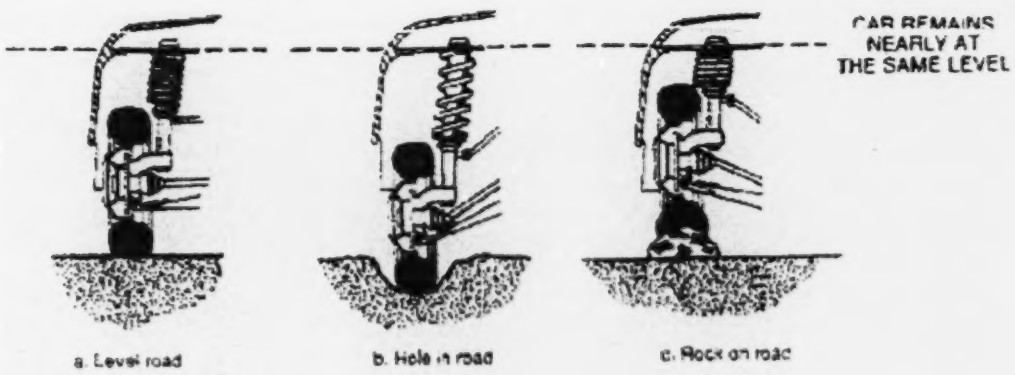


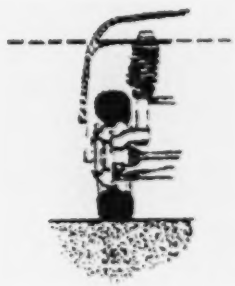
Fig. 5-9 Auto coil spring.

The elastic potential energy stored in coil springs can be calculated. Examples 5-D and 5-E show how this is done.

Example 5-D: Potential Energy in a Camp Auto Spring (English Units)

Given: Each front-end coil spring on an automobile has a spring constant k = 1000 pounds/inch. in the normal-ride, loaded condition. the spring is **compressed** 4 inches beyond its **unstretched** length.

Find: Potential energy stored in the compressed spring in units of **foot-pounds.**



Solution: Use the equation $E_p = \frac{1}{2} kd^2$, where
k = 1000 lb/in. (spring constant) and d = 4 in.

$$E_p = \frac{1}{2} \times 1000 \frac{\text{lb}}{\text{in.}} \times (4 \text{ in.})^2$$

$$E_p = \frac{1}{2} \times (1000 \times 16)\left[\frac{\text{lb} \cdot \text{in}^{\not 2}}{\not{\text{in}}}\right] \qquad \text{(Cancel units.)}$$

$$E_p = 8000 \textit{ in} \cdot \textit{lb}$$

Now change units from in·lb to ft·lb. Since 1 foot = 12 inches.

$$E_p = (8000 \not{\text{in}} \cdot \text{lb})\left[\frac{1 \text{ ft}}{12 \not{\text{in}}}\right] = 666.7 \textit{ ft} \cdot \textit{lb} \qquad \text{(Cancel units.)}$$

Therefore, E_p = 666.7 ft·lb of stored potential energy.

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#4 Vital Link Builds Career Awareness in Fort Worth

To increase students' career awareness, the Fort Worth Independent School District Office of Community and Business Partnerships instituted the Vital Link program in 1991. Through this program, most Fort Worth seventh- and ninth-grade students attend a job site and talk with employers and workers about the specific academic skills their jobs require. Students apply for these unpaid job-shadowing experiences that last five half-business days for seventh-grade students and three half-business days for ninth-grade students. There are more than 400 job sites, which range from curators and researchers at the Amon Carter Museum of Western Art to shift and department managers at Winn-Dixie grocery stores.

One day prior to the visit, teachers inform their students of what to expect, how they should behave, what to wear, and how to ask good questions. The first day of the job shadowing, one teacher accompanies five students to a job site. The teacher provides a half-hour orientation on the specifics of the job site, then each student is paired with a worksite mentor for the next four hours. During the business day, a worksite mentor goes through his regular workday, allowing his student to ask questions, perform smaller tasks, use safe equipment and observe. Students have a standard sheet of questions to answer their first day, including:

- What does this company do?
- What does he/she do on this job?
- What kind of training, education or experience is required?
- What skills did you use to do your work today?
- How are those skills connected to what you are learning in the classroom?

The answers to these questions help give students the basic flavor of the workplace. By the end of the experience, students are to have completed a second worksheet that answers more academically oriented questions:

- Find out what other jobs your mentor had prior to present employment.
- Find out all the uses of math necessary for the job.
- How often is reading required? What types of materials are read each day?
- What written work does the mentor have to do on the job?
- List examples of teamwork, problem solving, etc....

The answers to these questions and the concrete activities that students observe show them that academics are a necessary precursor to obtaining any skilled work--a very powerful message to a 13 year old trying to determine how hard, or whether, to study.

Some of the best job-shadowing experiences include:

- TU Electric--calculated total billing amount after reading electrical meter.
- Fort Worth Police Department--observed doctors in DNA lab.
- NationsBank--calculated and filled out deposit slips.
- Lockheed Martin Corp--calculated rounds of ammunition needed for specified time period for certain types of guns.
- Alliance Airport--learned how to read and predict weather using instrumentation.
- Alan Young Buick GMC Truck--learned how to create a budget and finance a car.
- Kaiser Permanente--used centrifuge to separate different types of blood.
- Vandervoorts Dairy--tested milk in the lab for freshness and added necessary vitamins.
- Spaghetti Warehouse--learned about predicting customer turnout.
- Tandy Corp--tested toys and games, compiled a report about how the new products work.

After the job-shadowing experience, mentors are asked to evaluate the student on his communication skills, openness to learning and aptitude. Students are asked to evaluate their worksite experience, based upon how accommodating, helpful and informative the sessions were about the importance of academics.

Teachers are asked to evaluate the skills they observe in the workplace, what they had done at the business site and suggestions for improvement.

Teachers who see these academic skills in action can draw upon this knowledge to create lessons that use these workplace experiences, further reinforcing the importance of academics.

Vital Link started in 1991 with 40 students and 20 teachers. In 1995-96, nearly 4,000 area seventh- and 3,000 ninth-grade students participated. Nearly two-thirds of Fort Worth junior high school students get a chance to make this connection.

Percent of Academic Skills Observed in the Workplace by Teachers

Skill Observed	Supervisors	Interns
Reading Comprehension	94.0	87.4
Summarization	60.7	73.9
Paraphrasing	58.3	64.0
Basic Math	96.4	85.6
Higher Math	57.1	56.4
Metric System	39.3	37.8
Charts/Graphs	50.5	71.2
Computer Technology	88.1	94.6
Written Communication	92.9	93.7
Grammar/Usage	86.9	87.4
Note Taking	64.3	74.8

The FWISD Research Department compiles evaluations to determine the effectiveness of the academics/workplace connection. According to the summary report above, teachers observe both academic and more general skills in nearly every Vital Link experience. This chart shows the frequency with which academic skills are seen in the Vital Link sites.

#5 Career Pathways: A Tool for Planning the High School Courseload

In a career pathway, students take the full regimen of college-preparatory academic courses, plus additional academic and vocational courses--beyond the core--that train them for life after high school.

For instance, in St. Mary's County, Maryland, a student will take four years of English and social studies; Algebra 1; geometry; and an additional, higher-level math; earth/space science and biology; to fulfill their core academic requirements. However, because St. Mary's uses the career pathway structure, students receive additional skills and knowledge--beyond the core--to advance them toward earning a postsecondary certification in their field. Upon entering high school, students choose from four broad career pathways: engineering/mechanical technology; health/human services; business/ management; and college preparatory.

In choosing the engineering/ mechanical pathway, the student will take a technology course to learn basic computer software, computer-aided drafting, hydraulics, and lasers in both the ninth grade and tenth grade. In eleventh grade, the student will take an applied physics course called Principles of Technology, to build the student's understanding of motion, acceleration and the workings of machines. Also, in eleventh grade, the student narrows the career focus to, for instance, electronics, and selects a high-quality two-credit vocational training course that mirrors the syllabus and rigor of a professional training course at nearby Charles County Community College. In twelfth grade, the student takes either a second, more complex, Principles of Technology course or chemistry; either Algebra 2 or Trigonometry; and a three-credit electronics course, also aligned with the Community College curriculum.

In choosing the health/human services pathway, the student will take a technology course to learn basic computer software, computer-aided drafting, horticulture/floral design, and environmental water management in both the ninth and tenth grade. In eleventh grade, the student can take either an applied chemistry or advanced biology course, depending on the selection of their career major. A career major with lower academic requirements, for instance, culinary arts, requires a high-quality two-credit Culinary Arts 1 training course that mirrors the syllabus and rigor of a professional training course at one of the foremost culinary universities in the country, Johnson and Wales University in Rhode Island. In twelfth grade, the student has the option, but not the requirement, to take higher-level academic courses, and a three-credit Culinary Arts 2 course aligned with the Johnson and Wales curriculum.

At the end of high school, students from both pathways have a solid academic foundation, though one is stronger than the other. Both have learned substantial technical skills. Both can enter community college with advanced credits, electronics students with five, Culinary Arts students with fifteen. After this four-year education, the student now has options: to pursue a four-year college degree or an associate's degree. Instead of graduating without a focus, St. Mary's students can move immediately into one of the community college's certificate programs that will likely land them a skilled, well-paying job within one to two years. And if the labor market changes, the student will have the analytical skills and academic foundation that will enable him or her to change jobs as well, and not get caught with highly specific skills that are not transferable.

#6 Career Academy Option

What is a career academy? Neill S. Rosenfeld, writing about programs sponsored by the National Academy Foundation (NAF) for the American Federation of Teachers' Fall 1991 *American Educator*, describes them this way:

NAF academies differ from traditional vocational courses in the balance between career and academic classes. Work-related training is the core of a vocational program, and classwork tends to be practical; for example, a student might learn the mechanics of being a teller. In contrast, NAF's courses are taken on top of the regular academic program and are more theoretical; a student might learn about bank telling but also would explore economics and how banks function in local and world markets. Three central assumptions unite the various programs:

- that students become more serious about education when they connect schoolwork with a way of earning a living, particularly when the connection is to an attractive job and a good living;
- that potentially boring classroom theory becomes concrete--and interesting--when it had to be applied in an apprenticeship; and
- that students mature when they're treated with respect and are expected to meet the same real-life work requirements as adults.

Rosenfield describes actual academies that prepare students primarily for college (the Academy of Finance) and direct entry to the workplace (the Travel and Tourism Academy).

The Academy of Finance--
Fort Hamilton High School, Brooklyn, N.Y.

The Academy of Finance program is rooted in rigorous supplemental classes that often extend beyond the school day. "They take our courses plus a full academic load, and it's a real burden on students," says John O'Connor, the teacher who coordinates the Academy of Finance program at Fort Hamilton High School in Brooklyn.

Classes in the junior and senior years include economics; brokerage procedures, banking and credit; financial products and financial planning; international finance; and accounting. Included is a course at a local college, which accustoms students to college and gives them a chance to succeed in higher education.

The courses include a good deal of practical knowledge. For example, in the banking course, students learn how to figure a monthly payment schedule and how to size up a loan applicant by analyzing the "five Cs" (character, capacity, capital, conditions and collateral).

There are sessions on writing resumes, succeeding in interviews, and choosing business attire. (Academy students must dress in business clothes on Fridays.) "Sometimes I'll be the student and they'll be the interviewers," O'Connor says. "I'll behave in an outrageous manner and make wild gestures and crazy remarks and wear inappropriate clothing. It's easier for them to see that I'm being inappropriate than when they, themselves, are."

There are workshops where Academy of Finance students from New York City's eight Finance Academies can meet business leaders and hear experts discuss "The Floor Trader's Role in the Futures Market," "How You Can Borrow Money," "Unknown Facets of Insurance," and "How To Succeed as a Broker."

The Travel and Tourism Academy--Richmond High School, Queens, N.Y.

The Academy of Travel and Tourism aims at preparing youngsters for a variety of jobs. Travel and tourism are multibillion-dollar industries employing 5.5 million people in jobs ranging from organizing conventions to working in hotels to serving as travel agents. The travel industry is one of the top three employers in 39 states.

Students get a firm view of travel industry economics, operations, marketing, writing and research. Richmond Hill's juniors arrive at 7:30 A.M. for a specialized computer course that teaches them how to make airplane reservations. They use a computer simulation that mimics the systems used by major airlines.

Speakers have come to the school to discuss hotel management, tour organizing, packaging bus tours, and writing travel literature. Students also get to hear from experts at an annual citywide meeting. Workshops include "Succeeding in Tomorrow's Hotel Industry," "Public Relations in Tourism," "How To Help the Fearful Traveler," "How To Arrange the Trouble-Free Conference" and "Airport Security."

Relating comments from teacher Joe Bines on his destination geography and social studies class from a Travel and Tourism Academy:

"And with the seniors, I take them around the world--Europe, the Middle East, Latin America, the Caribbean," he says. "I teach capitals, languages, customs" and he might add, history, politics and more.

Destination geography is more than knowing where someplace is on a map--which travel and tourism students learn fast enough. "If someone wants to take a fourteen-day tour of the Middle East, you have to know what sites have historical interest, Biblical importance, or political turmoil," Bines says. "Otherwise your tour group could get into a lot of trouble."

#7 Employability Skills Not Enough

Employers are concerned about their employees' ability to perform basic research tasks, write concise memos, analyze data and allocate resources. In 1990, the Secretary of Labor's Commission on Achieving Necessary Skills (SCANS) assembled labor, education and business leaders to identify the common skills associated with high-skill, high-wage jobs. The report received quite a bit of attention, and for good reason. SCANS helped call attention to crucial skills that every well-educated person should possess; to work with budgets, to evaluate data, to interpret and disseminate information, to use technology, and to make informed judgments and demonstrate leadership.

By emphasizing these skills, employers send schools a message about the broad skills graduates will need on the job. It would be a mistake, however, for school-to-career systems to interpret that message too narrowly or focus on these skills in a vacuum. We believe that a good academic curriculum taught with effective pedagogy can lead to the employability skills detailed by the SCANS report. Students who can write cogent research papers, sort out complicated historical events and simplify the complex processes of nature into simple diagrams are honing the analytical and reasoning skills that the business community is looking for.

Most importantly, these skills must be taught in the context of a rich academic experience, otherwise the danger exists that employability skills and academic courses will begin to compete for time in the school curriculum. This would undermine the quality of education, to the detriment of both business and students.

What are the SCANS Competencies

Below are the five basic SCANS competencies: resources, information, interpersonal, systems and technology.

- **Resources**--Developing resource skills means students can allocate time, money, material and human resources. Examples: creating timelines, preparing budgets or writing a job description.
- **Information**--Gathering and evaluating data, either from existing sources or by developing new ones, organizing and maintaining information, interpretation and dissemination of information, and computer proficiency. Examples: implementing a record-keeping system to store information, making oral presentations using multi-media devices, literacy in software programs such as Lotus 1-2-3, Harvard Graphics or Lexus.
- **Interpersonal**--The ability to be a team player, teach others, provide good customer service, demonstrate leadership, negotiation skills, and sensitivity to cultural diversity. Examples: work with a team to solve a problem, train a peer on the job, handle complaints both in person and on the phone, the ability to delegate, demonstrate an understanding of people of different cultural and ethnic backgrounds and how they need to work together.
- **Systems**--Understand how technological, social or organizational systems work and the ability to function within them. Examples: create or interpret organizational charts and understand how all parts of an organization work together to create a product.
- **Technology**--The ability to solve problems through the use of machinery and computers, or other technologies, as well as the ability to distinguish between computer programs, deciding which ones will produce the desired result. Examples: read technical specifications, set up or build equipment from instructions, troubleshooting and keeping equipment in working condition.

#8 Employers Send Message to Students that Performance Counts

In the January 26, 1996, edition of the Rochester *Times-Union,* Adam Urbanski, president of the Rochester Teachers Association, provides compelling examples of two programs in Rochester designed to show students that diligence pays off.

Mr. Urbanski describes an initiative created by Rochester Mayor William Johnson called the Summer Jobs Institute--a summer jobs program for city youth. The Institute had as a threshold eligibility requirement that the students have at least a "C" average in school as well as good conduct. No longer would financial need be the sole determinant for participation. The mayor promised enough city monies to sponsor the first 200 jobs and urged local employers to commit funds for an additional 600.

According to Mr. Urbanski, "Linking summer jobs to classroom performance makes good sense. It is a very tangible lesson about personal responsibility and its consequences. After all, if we truly believe that 'all children can learn,' then we must also believe that all children can learn to behave and make an effort to succeed."

In school, as in life, diligence matters no less than intelligence. As former Rochester Deputy Superintendent William Maloney often asserted, "work works." "We must, indeed, arm our children with the belief that they can succeed if they try hard and that their fate is largely within their own control. That takes high standards and real incentives to reach them."

"The Summer Jobs Initiative is one good example of how we can inject real and beneficial stakes into an environment that now, all too often, lacks any. Currently, in our schools, low effort and poor performance carry few sanctions, and hard work and good performance carry few rewards. Youth job-seekers everywhere, and not just during the summer, need to know that their school performance counts. But employers have to help schools demonstrate to students that there is, indeed, a connection between school and the world of work."

Following the model of the Summer Jobs Institute, Mr. Urbanski outlines a model of the Rochester Teachers Association efforts to link academic performance to work. Called the "Employers' Honor Roll," employers of city school students commit to:

- scrutinize a student's school transcript, cataloging courses taken, grades received, teachers' comments, attendance, conduct and other relevant information before hiring any student--even part time.
- hire only students who maintain a "C" average in their schoolwork. For students who are now earning at least a "C" average, employers will provide a mentor or a tutor to help these students improve.
- hire students for skill building, not de-skilled work so that part-time jobs can be a learning opportunity, not just a source of income.
- limit the number of hours a student may work during the school year.
- make continued employment conditioned on sustaining good behavior and satisfactory academic performance.
- adopt policies and practices that would make it easier for their employees (who are also parents of students) to become more involved in their own children's school and education.